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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/795,879	03/08/2004	George Carver	61404-1100	2091

24504 7590 03/01/2007

THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP
100 GALLERIA PARKWAY, NW
STE 1750
ATLANTA, GA 30339-5948

EXAMINER	
AWAI, ALEXANDRA F	
ART UNIT	**PAPER NUMBER**
3663	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/795,879	CARVER ET AL.	
	Examiner	Art Unit	
	Alexandra Awai	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12-34,48-51 and 53-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12-34,48-51 and 53-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 12/6/2006 have been fully considered but they are not in every respect persuasive. Claims 1, 2, 4, 5, 8, 18, 25, 28, 48 and 49 have been amended in an effort to overcome objections and rejections set forth in the previous Office Action. Those objections and rejections that have been overcome are omitted from the present Office Action and are considered withdrawn.

With regard to the prior art, Applicant specifically points to following appended feature: "wherein an axial center of each of the rods aligns with a center of the first and second side walls of both the first and second ones of the tubes" (e.g., claims 1 and 18). Applicant asserts that Soot, Fig. 8 does not show ***recesses*** that are in line with the center of the tubes as depicted in the instant Application. Such is clearly irrelevant, as the claims recite that the rods are in the recesses, and that the axial center of the ***rods*** are aligned with the centers of the first and second side walls. As such, there is no requirement that the prior art possess recesses as shown in Fig. 5 of the instant application. Soot, Fig. 8, shows rods (39) disposed in recesses (36) at the corners of tubes, the sidewalls (31) of the coupled tubes being aligned as claimed, with the rod's axial center disposed along the line formed by the walls, thus meeting the claim language.

With regard to Applicant's comments concerning the significant advantage achieved by the tube coupling of the instant invention, note Examiner's previous response:

> "Examiner never suggested that it was *not advantageous* to making the rods integral with the tubes by fitting them into recesses. Rather, it is stated that there is there is nothing *particularly inventive or unexpected* about this mode of integration. The skilled artisan does not require the inventor's guidance or particular motivations in order to utilize the

> practice of setting a dowel or other similarly shaped connecting element into a fitted recess, as such is a ubiquitous expedient in the mechanical arts. In this case, the argument that it is advantageous has no bearing on the invention's novelty, but rather demonstrates an obvious motivation to apply a well-known and oft-used mechanical technique. It is *prima facie* obvious that reducing the size of connecting elements between the tubes will preserve space in the developed cell. Accordingly, one could argue that configurations such as that shown in Ohsono et al. (Fig. 1) operate on this principle by eliminating the connecting bar altogether" (Office Action dated 8/8/2006, p. 3).

Furthermore, it is a notoriously well-known expedient in the mechanical arts to dispose a rod in a recessed corner as an aspect of a space-saving coupling arrangement (see US Patent No. 4,615,278 to Cabrelli or 4,637,323 to Nicely).

Given that both the instant invention and the inventions of the cited prior art comprise "welds and other connection points" (Remarks, p. 16) – such as the hinge-type coupling of Fig. 6 – it would be merely speculation to argue that the forces generated in the instant invention produce lower material stresses on the mechanical couplings. Since neither Soot nor Bosshard disclose the invention as depicted in the figures of the instant application, it is quite impossible for them to *teach away* from it. The combined teachings of Soot and Bosshard do render the claimed invention obvious, and therefore encompass any stress-reducing element that the claimed invention comprises. It is noted that Applicant has not contested any other particular feature in the most recent response.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Soot.

Soot discloses a nuclear fuel storage rack with tubes that are each created from U-shaped elements (Fig. 4) and arranged in an alternating pattern by connections formed at the corners (44) of the tubes. These corners have both corresponding recesses and flat, load-bearing surfaces. Rods (e.g., Fig. 6 and Fig. 7) are attached to – and mounted in recesses of – one tube and mounted in the recess of the adjoining tube. Once assembled, the elements form a plurality of tubes having aligned sidewalls as recited in claim 1. Although only a single portion of the modular system is shown in Fig. 8, Soot teaches that the individual completed slot enclosures are jointed at their corners by inserting the rod (39), which requires a plurality of the rods (col. 4, lines 6-24). Fig. 8, shows rods (39) disposed in recesses (36) at the corners of tubes, the sidewalls (31) of the coupled tubes being aligned as claimed, with the rod's axial center disposed along the line formed by the walls, thus meeting the claim language. While patent drawings are not drawn to scale, relationships clearly shown in the drawing of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 3-10, 12-17, 19-34 and 48-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soot as applied to claim 18 above, and further in view of admitted prior art Bosshard.

Soot teaches an alternating arrangement of square tubes that is equivalent to the developed cell – inclusive of a four-tube array, which is disclosed by the applicant as conventional, as well as the placement of rod segments (Fig. 8) mounted at the corners of the tubes, and the use of welding (e.g., 43) for obtaining additional rigidity. Defining first and second rods attached to abutting tubes that are mounted in recesses and that are aligned with one another is equivalent to characterizing the single rods (39) of Soot as two separable rods. This characterization does not introduce any novel aspect to the invention (MPEP § 2144.04.V.C). Moreover, as will be discussed, Bosshard teaches cooperating connecting elements secured to each other and to respective tubes.

Applicant states that dry storage systems are typically housed in containers. Note MPEP § 2129 [R-3], which states, "A statement by an applicant during prosecution identifying the work of another as prior art is an admission that that work is available as prior art against the claims."

If the tubes are housed inside the horizontal type of container disclosed as known by the applicant, it is inherent that the tubes will contact at least one side of the container (claim 48). As to limitations which are considered to be inherent in a reference, note the case law of *In re Ludtke*, 169 USPQ 563, *In re Swinehart*, 168 USPQ 226, *In re Fitzgerald*, 205 USPQ 594, *In re Best et al.*, 189 USPQ, and *In re Brown*, 173 USPQ 685, 688. The load-bearing surfaces of the tube corners in the design taught by Soot directly abut load-bearing surfaces of adjoining tubes. Soot does not teach that the rods may be hollow and used with cooperating pins.

The hollow rod-pin combination recited in the current claims amounts to no more than a description of the commonplace hinge, having a barrel comprised by two knuckles, each knuckle extending from a separate leaf, where the leaf consists of the sidewall of one of the adjacent tubes. This type of structural connection is notoriously well known. Alternatively, Bosshard provides a teaching for an annular element that connects the corners of tubes in a rack for storing nuclear fuel and into which a pin having a head and body portion is inserted (Figs. 2 and 3). This structure is equivalent to that created by the axially aligned hollow rod and pin combination claimed in the present application because the only different is which aspects of the connection are made integral as opposed to separable. Additionally, Bosshard discloses that it is considered a simple and reliable solution to connect square tubes with lugs in the form of hinges or pivots that are welded to the edges of those tubes and to pass a pin through the lugs to provide lateral support to the tubes (col. 1, lines 7-21).

Receiving rods in recesses at the corners of the tubes is structurally equivalent to forming the rods as an integral part of the tube corner. Unless there is something particularly inventive or unexpected about the mode of integration of these parts – and in the present application this is

not the case – such a structure is not considered inventive, regardless of its advantageous nature. See *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). Note, as discussed in section 1 of this Office Action, that Soot demonstrates it is *not* novel to position rods to be received in recesses (Fig. 8). Increasing the number of the hinge-like connections or of the rod-recess connections at the corners is no more than the duplication of parts with predictable and intended effects. See *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

It would have been obvious to one skilled in the relevant art to combine the features (i.e., the various connector assemblies) and teachings (i.e., the use of welding) of the foregoing references to achieve the structures and arrangement claimed because to do so would be a cost-effective use of widely available technology. For example, the joints described by Soot are intended to provide a rigid structure with good resistance to seismic loads (see Abstract), and Bosshard states that having hinge-like connections for fuel storage racks is a simple and reliable choice. To achieve the presently claimed invention, one would only have to replace some of the rod-recess connections of the device taught by Soot with some of the hinge-like connections discussed in Bosshard, and to apply this technology to conventional dry storage vessels. The motivation to make this modification would be to take advantage of the stated benefits of each established technology.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandra Awai whose telephone number is (571) 272-3079. The examiner can normally be reached on 9:30-6:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA
February 26, 2007

JACK KEITH
SUPERVISORY PATENT EXAMINER